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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,727	10/12/2001	Daniel R. Mathias	10017566-1	2463

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EXAMINER

MCCARTHY, CHRISTOPHER S

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 02/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/976,727	Applicant(s) MATHIAS ET AL.	
	Examiner Christopher S. McCarthy	Art Unit 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-17, 20, 21 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 18, 19, 22 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>response to arguments</u> . |

DETAILED ACTION

1. Claims 1-3, 6-11, 14-17, 20-21, 23, 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Johnson et al U.S. Patent Publication US2003/0046606.
2. Claims 9-14, 23-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
3. Claims 4, 5, 12, 13, 18, 19, 22, 24, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 9-14, 23-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The preamble needs to recite a *computer* readable medium containing *computer* readable instructions and the execution thereof.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6-11, 14-17, 20-21, 23, 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Johnson et al U.S. Patent Publication US2003/0046606.

As per claim 1, Johnson teaches a method for testing a service that provides interface functions having no user space interaction and that is runs in a kernel space of an operating system (paragraph 0007), said method comprising: generating a dynamically loadable kernel module (DLKM) containing a pseudo device driver having interface commands corresponding to the interface functions of the service to be tested (paragraph 0022, 0017, 0009), the generation being based upon function prototypes corresponding to the interface functions of the service to be tested (paragraph 0022); loading the DLKM into the kernel space (paragraph 0008); invoking the interface commands to exercise the interface functions to be tested (paragraph 0022); and unloading the DLKM module (claim 5).

As per claim 2, Johnson teaches method in accordance with claim I wherein invoking the interface commands further comprises loading a user library having user

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interfaces configured to test the kernel interfaces via the DLKM interface commands (paragraph 0021).

As per claim 3, Johnson teaches a method in accordance with claim 2 wherein invoking the interface commands further comprises invoking the user interfaces of the user library via a program running in user space (paragraph 0021, 0022).

As per claim 6, Johnson teaches a method in accordance with claim 1 wherein unloading the DLKM module comprises removing the interface commands corresponding to the interface functions of the service to be tested, so that the interface commands are no longer available (claim 5).

As per claim 7, Johnson teaches a method in accordance with claim 1 wherein the interface commands of the DLKM module are accessible only to a privileged user or users, and not to another user or users (paragraph 0020).

As per claim 8, Johnson teaches a method in accordance with claim 1 wherein invoking the interface commands to exercise the interface functions to be tested comprises opening the pseudo device driver, and invoking the interfaces of the device driver (paragraph 0020).

As per claim 9, Johnson teaches a machine readable medium having recorded thereon machine readable instructions, execution of which by a machine facilitates testing of a computing apparatus having a service with interface functions that have no user space interaction and that runs in a kernel space of an operating system (paragraph 0007), said machine readable medium comprising one or more code segments that represent instructions to: generate a dynamically loadable kernel module (DLKM) containing a pseudo device driver having interface commands corresponding to the interface functions

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of the service to be tested (paragraph 0009, 0017), the generation being based upon function prototypes corresponding to the interface functions of the service to be tested (paragraph 0022); load the DLKM into the kernel space (paragraph 0009); invoke said interface commands to exercise the interface functions to be tested (paragraph 0022, 0017); and unload said DLKM module (claim 5).

As per claim 10, Johnson teaches a medium in accordance with claim 9 wherein to invoke the interface commands, said machine readable medium comprising one or more code segments that represent user library having user interfaces, execution of which by the machine tests the kernel interfaces via said DLKM interface commands (paragraph 0021).

As per claim 11, Johnson teaches a medium in accordance with claim 10 wherein to invoke said interface commands, said machine readable medium comprising one or more code segments that represent instructions to invoke said user interfaces of the user library via a program running in user space (paragraph 0021, 0022).

As per claim 14, Johnson teaches a medium in accordance with claim 9 wherein the interface commands of the DLKM module are configured to be accessible only to a privileged user or users, and not to another user or users (paragraph 0020).

As per claim 15, Johnson teaches a computing apparatus comprising a processor and a storage device having recorded thereon a kernel of an operating system that includes a service in kernel space that has interface functions without user space interaction (paragraph 0007), said computing apparatus configured to: generate a dynamically loadable kernel module (DLKM) containing a pseudo device driver having interface commands corresponding to the interface functions of the service to be tested

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(paragraph 0009, 0017, 0022), the generation being based upon function prototypes corresponding to the interface functions of the service to be tested; load the DLKM into the kernel space (paragraph 0009); invoke said interface commands to exercise the interface functions to be tested; and unload said DLKM module (claim 5).

As per claim 16, Johnson teaches a computing apparatus in accordance with claim 15 wherein to invoke the interface commands, said computing apparatus is further configured to load a user library having user interfaces that are configured to test the kernel interfaces via said DLKM interface commands (paragraph 0021).

As per claim 17, Johnson teaches a computing apparatus in accordance with claim 16 wherein to invoke said interface commands, said computing apparatus is further configured to invoke said user interfaces of said user library via a program running in user space (paragraph 0021, 0022).

As per claim 20, Johnson teaches a computing apparatus in accordance with claim 15 wherein to unload said DLKM module, said computing apparatus is configured to remove said interface commands corresponding to the interface functions of the service to be tested, so that said interface commands are no longer available (claim 5).

As per claim 21, Johnson teaches a method of generating a kernel module containing a pseudo device driver having interface commands corresponding to interface functions of a service to be tested (paragraph 0007, 0022), the service being arranged to run in a kernel space of an operating system and to provide one or more interface functions none of which exhibits user space interaction paragraph 0018), said method comprising: providing the service with one or more function prototypes corresponding to the one or more interface functions of the service to be tested; and generating a

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dynamically loadable kernel module (DLKM) containing the pseudo device driver based upon the one or more function prototypes of the service to be tested (paragraph 0009, 0018, 0022).

As per claim 23, Johnson teaches a machine readable medium having recorded thereon machine readable instructions, execution of which by a machine generates a kernel module containing a pseudo device driver having interface commands corresponding to interface functions of a service to be tested, the service being arranged to run in a kernel space of an operating system and to provide one or more interface functions none of which exhibits user space interaction, said machine readable medium comprising one or more code segments that represent instructions to provide the service with one or more function prototypes corresponding to the one or more interface functions of the service to be tested; and generate a dynamically loadable kernel module (DLKM) containing the pseudo device driver based upon the one or more function prototypes of the service to be tested (paragraph 0007, 0009, 0021, 0022).

As per claim 25, Johnson teaches a computing apparatus comprising a processor and a storage device having recorded thereon a kernel of an operating system that includes a service in kernel space that has interface functions without user space interaction, said computing apparatus configured to: provide the service with one or more function prototypes corresponding to the one or more interface functions of the service to be tested; and generate a dynamically loadable kernel module (DLKM) containing the pseudo device driver based upon the one or more function prototypes of the service to be tested (paragraph 0007, 0009, 0021, 0022).

Allowable Subject Matter

6. Claims 4, 5, 12, 13, 18, 19, 22, 24, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments filed 12/16/2004 have been fully considered but they are not persuasive.

The applicant has argued that Johnson does not teach the generation of a dynamically loadable kernel module (DLKM) based upon function prototypes corresponding to interface functions of a kernel-space service that is to be tested. The examiner respectfully disagrees. The examiner contends that the generation of a DLKM is an on-going process in the invention of Johnson. Johnson teaches that the module is adapted to be dynamically loaded to a kernel (paragraph 0009). This adaptation is the start of the generation of the DLKM from an existing module in the computer system. The further generation of the DLKM is performed when the module calls, or requires, a user level test program that contains the proper knowledge to test the object (paragraph 0022). The generation of the DLKM testing operation is based upon the knowledge of the user level test program supplied as its necessary routine. A module, by definition, is comprised of a collection of routines to perform a task. The user level program is needed by the module to perform the testing. The call to the user level program is equivalent to a call to function. A routine is often synonymous to a function, and can be defined as such in this case. Therefore, the call to the user level test program to test the cache over the

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interface of the DLKM is equivalent to the limitation of the DLKM based upon the function prototypes corresponding to interface functions of a kernel space service to be tested. In light of the above arguments, all applicable claims stand rejected.

The examiner would like to remind the applicant that objected claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. McCarthy whose telephone number is (571)272-3651. The examiner can normally be reached on M-F, 9 - 5:30.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571)272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

csm

January 27, 2005


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